



Center for
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Statistics

US Environmental
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Major Findings from the CEIS Review of EPA'S

BIENNIAL REPORTING SYSTEM (BRS) DATABASE



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Major Findings from the CEIS Review of EPA's BRS Database

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EXECUTIVE SUMMARY

The Biennial Reporting System (BRS) is a repository of information collected under the Resource Conservation and Recovery Act of 1976 (RCRA) as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). The BRS database contains information on a variety of wastes regulated under the RCRA program. The majority of the data in BRS is collected by States and/or EPA Regions using the *Hazardous Waste Report, Instructions and Forms* (commonly called the Biennial Report) produced by EPA Headquarters (HQ). Some States, however, chose to use a different data collection instrument, such as a State-specific reporting form. States using State-specific forms are responsible for collecting information that is similar in content, definition, and scope to the Federal forms package.

The BRS database contains data as reported by Large Quantity Generators (LQGs) and Treatment, Storage, and Disposal sites (TSDs). The information from LQGs includes the source, characteristics, and quantities of hazardous waste generated, managed on-site, and shipped off-site for treatment, storage, and disposal. TSDs report the receipt and the processes of managing hazardous wastes. Hazardous waste generation and management data are self-reported by the regulated facilities, and facilities use engineering and monitoring methods to collect the information that is included in their reports.

The data on hazardous waste generation and management have been collected every two years since 1981. Data from the 1989, 1991, 1993, 1995, and 1997 biennial report cycles are included in the BRS database. Data from 1981, 1983, 1985, and 1987 cycles are not available. (Note: A Biennial report cycle is referenced by the calendar year in which the activities the respondent is reporting on occurred. For example, the 1997 Biennial report cycle covers activities that occurred during 1997, but respondents do not report any information on these activities until 1998). The 1995 cycle is the latest year for which final data are available. (Preliminary data for the 1997 cycle are available now and final data will be available later in 1999.)

Reporting requirements have remained relatively unchanged over the reporting period. This allows comparison of waste generation and management activities over time. Major changes over the period of 1989 to 1997 include:

- In 1990, due to promulgation of the Toxicity Characteristic Leaching Procedure rule (TCLP), 26 new waste codes were added. These changes mean that the wastes covered under the TCLP rule were not considered as RCRA wastes prior to 1990.
- During the 1997 reporting cycle, respondents were not asked to provide information on their waste minimization activities, and detailed questions on on-site waste processing systems were not asked.
- Respondents are required to provide the addresses of their physical locations, which makes it possible to compare waste generation and

management information among geographical locations. Reporting facilities are not required to provide latitude and longitude data.

When collecting Biennial Report data, respondents are requested to provide their generator status according to the Federal generation status standards. Some States, however, have a more stringent definition of LQG, or use a different State-specific forms package that only asks respondents about their generator classification based on State standards. This interpretational inconsistency may have an impact when performing State-to-State comparisons on the number of LQGs.

The BRS database stores the respondents' RCRA identification numbers, which allows users to link information with other databases that store this information (specifically including the Resource Conservation and Recovery Information System (RCRIS)). Facilities across different databases can also be linked through the physical location addresses.

Data on waste generation and management are characterized by the use of RCRA waste codes. Some waste codes correspond to specific chemical compounds, while other waste codes define sources of waste or characteristics of waste. Information on chemical concentrations is not stored in BRS. The use of waste codes means that for some wastes, users will not be able to identify the specific chemical compounds that are present in the waste. It is not possible to link RCRA waste codes as found in BRS to information in other databases that contain information on chemical codes.

The BRS data are made available to the public through published reports, CD-ROMs, and the internet. The Office of Solid Waste publishes the *National Biennial RCRA Hazardous Waste Report* which includes a subset of wastes reported by respondents (those that were managed in units subject to RCRA permitting requirements). More information on the Biennial Report, including copies of the *National Biennial RCRA Hazardous Waste Report* and the national data files, can be found at the following site:

<http://www.epa.gov/epaoswer/hazwaste/data/index.htm#brs>.

BRS data are also available through Envirofacts (which is EPA's public access data warehouse). Envirofacts supports a standard report interface and also allows users to perform their own customized data queries:

<http://www.epa.gov/enviro>

1. INTRODUCTION

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA) amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Large Quantity Generators (LQGs) report information on RCRA hazardous waste generation. LQGs and Treatment Storage and Disposal (TSD) facilities report information about hazardous waste management. The term hazardous waste refers to solid waste which is assigned a Federal hazardous waste code and is regulated by RCRA. EPA uses the census approach and requires all LQGs and TSDs to report waste generation and management information to the delegated States or EPA Regions.

Biennial Reporting System (BRS) is a repository of information collected under RCRA and HSWA. BRS data allow RCRA program managers to conduct programmatic assessments to determine quantities and types of hazardous waste generated in the US, and to follow the management, treatment, and disposal of hazardous waste. BRS data are used for a variety of rule-making and rule-analysis activities. Data from BRS are used by many States to levy taxes on hazardous waste generators based on the amount of hazardous waste they generate. Data are also used to perform capacity analysis, and inform the public, the regulated community, and government agencies about the scope and nature of hazardous activities and how these activities have been changing over time.

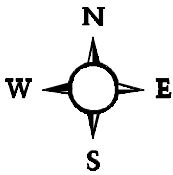
The EPA Office of Solid Waste and Emergency Response (OSWER) is responsible for the maintenance and administration of BRS. Every two years, EPA produces National and State-level reports based on BRS data. The scope of this document is limited to a review of the national BRS database.

2. SUMMARY ANSWERS TO REVIEW QUESTIONS



2.1. What does the database cover?

BRS contains data on RCRA wastes. Data are reported by Large Quantity Generators (LQGs) on source, characteristics, and quantities of hazardous waste generated, managed on-site, and shipped off-site for treatment, storage or disposal. Treatment, Storage, and Disposal (TSD) facilities report the receipt and the processes of managing hazardous wastes. A subset of the database is used to prepare the National Biennial RCRA Hazardous Waste Report. Only those wastes that are managed in units subject to RCRA permitting requirements are included in the National Report.



2.2. Can the database be used for spatial analysis?

The database can be used for spatial analyses because LQGs and TSDs are required to report the addresses of their physical location. The database contains information on spatial elements such as the street address for each facility, the facility's ZIP code, the Federal Information Processing Standards (FIPS) code for the county, and the two-letter US Postal Service abbreviation for the State where the facility is located. These location parameters can be used to report and compare waste generation and management activities of LQGs and TSDs in different geographic areas. Latitude and longitude information is not collected.

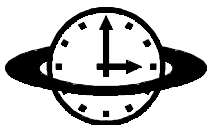
When collecting Biennial Report data, respondents are requested to provide their generator status according to the Federal generation status standards. Some States, however, have a more stringent definition of LQG, or use a different State-specific forms package that only asks respondents about their generator classification based on State standards. This interpretational inconsistency may have an impact when performing State-to-State comparisons on the number of LQGs.



2.3. Can the database be used for temporal analysis?

Hazardous waste data are collected biennially to allow comparisons of waste generation and waste management activities over time. BRS data can be used to obtain an overview of the progress of the RCRA program by tracking trends in the amounts and types of hazardous waste generated and managed. BRS data have been collected since 1981 but only data from 1989 onwards are available for use. The 1995 cycle is the latest cycle for which final BRS data are available. Preliminary data for the 1997 Biennial Report cycle are available now and final data will be available later in 1999.

Users can examine trends at the National, Regional, State, and facility levels. Except for the addition of 26 new codes in 1990 (for details, see question 2.4), reporting requirements have remained relatively unchanged which makes it feasible to perform temporal analyses. Users should exercise caution while comparing data for years prior to 1991 with post 1991 data.

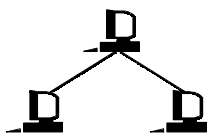


2.4. How consistent are the variables over space and time?

In general, reporting requirements are consistent. The list of Federal waste codes is in the Code of Federal Regulations (40 CFR Part 261) and all States report information for the published lists of codes. This allows a comparison of Federal waste generation and management among different States. Some States may collect additional hazardous waste generation and management information which are not required by EPA.

The list of waste codes has remained fairly constant over the life span of BRS with the exception of the year 1990 when 26 new codes were added due to promulgation of the Toxicity Characteristic Leaching Procedure (TCLP) rule. These changes mean that the wastes covered under the TCLP rule were not considered as RCRA wastes prior to 1990. These differences should be taken into account when comparing hazardous waste information over time.

Some States may collect additional hazardous waste generation and management information which are not required by EPA. When collecting Biennial Report data, respondents are requested to provide their generator status according to the Federal generation status standards. Some States, however, have a more stringent definition of LQG, or use a different State-specific forms package that only asks respondents about their generator classification based on State standards. This interpretational inconsistency may have an impact when performing State-to-State comparisons on the number of LQGs.



2.5. Can data from BRS be linked with information from other databases?

The reporting LQGs and TSDs can be linked with information in other databases. Respondents may be linked by matching the EPA identification number if both databases store this number, or by matching the addresses of the respondents. The EPA identification number is used in other EPA databases including the Resource Conservation and Recovery Information System (RCRIS).

BRS stores data on wastes which are characterized using waste codes that are defined by the RCRA program (see CFR Part 261). Waste codes are used by the RCRA program to identify and characterize wastes. There are several different types of waste codes. Some waste codes are used to characterize properties of the waste (for example, D001 is an ignitable waste), some waste codes are source specific (for example, K013, bottom stream from the acetonitrile column in the production of acrylonitrile), and some waste codes characterize discarded commercial chemical products, off-specification species, container residues, and spill residues (for example, U007, Acrylamide). Each waste in the BRS database may be characterized by multiple different waste codes due to the specific nature of the waste. The RCRA program waste codes do not necessarily correspond to other databases which store information on specific chemical compounds (like the standard Toxic Chemical Release Inventory System (TRI)). It may be difficult to compare toxic release data obtained from TRI with data in BRS because of the different information stored by the two databases.



2.6. How accurate are the data in BRS?

BRS data are submitted by regulated facilities in accordance with the detailed guidance from EPA or States and certified for accuracy by the regulated industry. Collection, validation, and verification of the biennial reporting data are the responsibility of the RCRA-authorized States or Regions (implementors). EPA Headquarters (HQ) does not modify data reported by the implementors.

All data in the BRS database pass a minimum set of data quality checks. The data quality checks correspond to the mandatory data elements as listed in the Biennial Report Forms. Most of the minimum data quality checks are checks for allowed values or conformance to code lists. Additionally, for every Biennial Report cycle, EPA HQ reviews those wastes that contribute substantially to the data presented in the *National Biennial RCRA Hazardous Waste Report*. After reviewing the data, EPA HQ communicates its findings to the implementing State or Region and encourages the implementing agency to make the appropriate changes. Many implementing States and Regions also conduct other additional data quality checks.

It is somewhat difficult to gauge the overall accuracy of data in BRS. EPA HQ has not conducted any independent formal data quality audits on implementer data in more than ten years. EPA HQ believes that it accurately reports that data which States and Regions have furnished. It is unknown whether any States have conducted independent data quality audits. Implementors have access to the Biennial Report data for more than 12 months before the data is finalized. EPA HQ also produces and distributes a preliminary report before the final report is produced. While the report is still in the preliminary phase, reporting sites may contact their State or Region if they perceive that there is a discrepancy with how their data is being reported. This review period typically lasts for three months.

Users of Biennial Report data should be aware that the data present in BRS are the data that the respondents themselves report (that is, the data are self-reported), keeping in mind that respondents must certify the accuracy of the data. For the most part, the data has not been independently reviewed or verified. In certain cases, respondents must estimate quantities of wastes for waste streams that are not precisely measured. Users of the data should not expect the data quality to be as precise or consistent as data collected in laboratory studies or other scientific data-gathering exercises.



2.7. What are the limitations of BRS?

BRS data are collected primarily to support RCRA program management activities. Users of the data are sometimes disappointed when attempting to use the BRS database for purposes for which it was not designed. Below are listed some points that BRS data users should be aware of when using the BRS data:

1. BRS data can not be used to calculate total quantities of chemicals released to the environment. BRS collects data on wastes and does not collect data on chemicals or chemical concentrations, and so it can not be used for this purpose. There are other databases available for this purpose (especially TRI).

2. Often wastes in BRS are characterized by multiple waste codes. Each waste characterizes the total quantity of waste generated or managed, and a contribution of any single waste code cannot be deduced from total waste. For example, if a waste has three waste codes, it is not correct to assume that each waste constitutes one-third or any other specific proportion of the amount of the waste. This is not a data irregularity or mistake; rather it is a consequence of the basic enabling legislation of the RCRA program.
3. BRS data can not be used to calculate the number of hazardous waste shipments or manifests. BRS does not collect data on number of shipments, only on total quantity shipped.
4. BRS data can not be used to check whether waste that was shipped from one site is actually received at another site. This type of analysis is complicated by two issues. Issue one is that BRS does not collect information on a shipment-by-shipment basis (that is, hazardous waste manifest information is not collected in BRS). Also, the reporting of wastes that flow through a commercial transfer facility is difficult. For example, in many cases a hazardous waste generator will contract with a commercial hazardous waste collection firm to collect its waste. The waste from many generators will be collected, mixed together, and then sent to a variety of commercial TSDs. There is no accurate way to report that a particular waste was sent from one shipper to one commercial TSD because of the commercial transfer facility.
5. BRS data are collected every two years rather than annually and no dates are provided for when, in the reporting year, the waste was generated. The data becomes available to the public approximately 18 months after reporting.



2.8. How can I get information on BRS?

The Office of Solid Waste and Emergency Response (OSWER) provides information on BRS data and many of its documents through the following web site:

<http://www.epa.gov/epaoswer/hazwaste/data/>

In addition to the Instructions and Forms for the regulated community, OSWER provides National Biennial RCRA Hazardous Waste Reports and the Biennial Reporting System data files for the reporting years 1995, 1993 and 1991. BRS data can be purchased from the National Technical Information Services (NTIS) on CD-ROMs. Internet users can query BRS data at the following sites:

Right-to-Know network — <http://www.rtk.net>

EPA's databases — <http://www.epa.gov/enviro/>

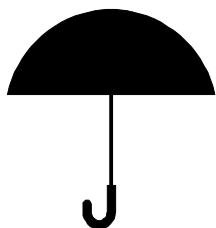


2.9. Is there documentation on BRS?

Reports for 1991, 1993 and 1995, as well as instructions and reporting forms for 1995 and 1997, are available from the EPA Office of Solid Waste at the following Web address:

<http://www.epa.gov/epaoswer/hazwaste/data/index.htm>

3. DETAILED ANSWERS TO REVIEW QUESTIONS



3.1. What does the database cover?

Under the authority of Sections 3002 and 3004 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended by the Hazardous and Solid Waste Amendments (HSWA), delegated States or Regions collect hazardous waste generation and management information. Section 3002 requires hazardous waste generators to report to EPA or authorized States, at least every two years, the quantities, nature, and disposition of generated hazardous waste. Under the authority of Section 3004, EPA requires reporting by Treatment, Storage, and Disposal (TSD) facilities, about the waste they receive and the management of the received waste. BRS is a national repository of data submitted to EPA by the delegated States or Regions. BRS contains data as reported by Large Quantity Generators (LQGs) on the source and the characteristics and quantities of hazardous waste generated, managed on-site, and shipped off-site for treatment, storage, or disposal. TSD facilities report the receipt and processes of managing hazardous wastes.

BRS data are used to oversee the environmental progress of the RCRA program, to measure success in meeting program goals, to support development of regulations and evaluate their environmental impact, and to set environmentally-based permitting and compliance priorities. Data are also used to inform the public, regulated community, government agencies, and the program managers about the scope and nature of hazardous waste activities and how these activities have been changing over time.

Who Must Report?

Section 3002 requires hazardous waste generators to report to EPA or authorized States, at least every two years, the quantities, nature, and disposition of generated hazardous waste. Under the authority of Section 3004, EPA requires TSD facilities to report a description of the type and quantity of hazardous waste received and managed during the reporting year and the method(s) used for treatment, disposal, or recycling. The national BRS database contains information provided by LQGs and TSDs.

Under RCRA, a waste is any solid, liquid, or contained gaseous material that is discarded by being disposed of, burned/incinerated, or recycled. Waste is considered to be a hazardous waste if it falls into either of the following two categories:

- It is a listed waste if it is one of the more than 400 wastes that appear on one of the five lists published in the Code of Federal Regulations (40 CFR Part 261). The waste lists are grouped into five major categories, where:
 - list D consists of specific wastes;
 - list F consists of hazardous wastes from nonspecific sources. These are generic wastes commonly produced by manufacturing and

- industrial processes;
 - list K consists of hazardous waste from specific sources and identified industries;
 - list P consists of acute hazardous wastes which include discarded commercial products, off-specification species, container residuals and spill residues thereof; and
 - list U consists of toxic wastes which include discarded commercial chemical products, off-specification species, container residuals and spill residues thereof.
- It is a characteristic waste if the waste does not appear on any of the above-mentioned lists but demonstrates one or more of the following characteristics. It is:
 - ignitable, (i.e., it will catch fire under certain conditions);
 - corrosive, (i.e., it corrodes metals or has a very high or very low pH);
 - reactive, (i.e., it is unstable and explodes or produces toxic fumes, gases, or vapors when mixed with water or under other conditions such as heat or pressure); and/or
 - toxic, (i.e., it is harmful or fatal when ingested or absorbed, or it leaches toxic chemicals into the soil or ground water when disposed of on land).

As mentioned previously, facilities must report their activities involving RCRA hazardous waste to BRS if they are either a RCRA-defined LQG or a TSD facility.

1. Large Quantity Generator: A generator is defined as a Federal LQG if it meets any of the following criteria during the year: [a] the facility generated in one or more months 1,000 kg (2,200 lbs) or more of RCRA hazardous waste; or [b] the facility generated in one or more months, or accumulated at any time, 1 kg (2.2 lbs) of RCRA acute hazardous waste; or [c] the facility generated or accumulated at any time more than 100 kg (220 lbs) of spill cleanup material contaminated with RCRA acute hazardous waste. The wastes that are not to be counted in determining whether a site is a LQG include: (i) RCRA hazardous wastes managed in systems regulated under the Clean Water Act (i.e., wastewater treatment plants) or the Safe Drinking Water Act (i.e., underground injection wells), (ii) wastes that are recycled or reclaimed, and (iii) wastes regulated only by a given State and not by RCRA.

2. Treatment, Storage, and Disposal Facility: This is a facility that treats, stores, or disposes of hazardous waste. Treatment is any method, technique, or process designed to: (1) change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste; (2) recover energy or material resources from the waste; or (3) render such waste nonhazardous or less hazardous. Storage is the temporary holding of hazardous waste until it is treated, disposed of, or stored elsewhere. Storage methods include use of containers, tanks, and surface impoundments. Disposal is the discharge, deposit, injection, dumping, spilling, leaking, or placing of waste so that it may enter the environment (air, land, or water).

How Are Data Reported?

Under Federal requirements, facilities have to submit data to RCRA, authorized States, or Regions on March 1 of the year following the reporting year. For example, for the reporting year 1995, the data had to be submitted by March 1, 1996. Any facility may request and receive an automatic two-month extension to May 1. A further extension may be granted by the State if the facility demonstrates a good-faith effort in attempting to meet the May 1 extended deadline and has a compelling reason for not being able to do so. After receiving data from the facilities, the States or Regions have until September 30 to upload data to the National BRS database. The national database is temporarily frozen to prepare preliminary Biennial Reports. The preliminary reports are made available by December 31 and the database is available for corrections until March 31 of the following year. After this time, the database is again frozen and final BRS reports are produced and distributed by the end of the summer. Thus the final reports for the reporting year 1995 are available in the summer of 1997.

What Information Is Reported?

The records in the national BRS database contain information on many different types of hazardous wastes. Some types of wastes that are included in the database are wastes managed in units subject to RCRA permitting requirements, generated by LQGs, managed on-site and shipped off-site, and waste received by TSDs. Data are also available for some State-only wastes (wastes that do not have any EPA waste codes) as well as wastes managed in units exempt from RCRA permitting standards. Not all data in the BRS database are reported in the National Biennial RCRA Hazardous Waste Report.

The data are collected through three major forms: (1) the Identification and Certification (IC) form; (2) the Waste Generation and Management (GM) form; and (3) the Waste Received from Off-site (WR) form. In some of the earlier reporting years, additional forms (such as Waste Minimization (WM) and Waste Treatment, Disposal, or Recycling Process Systems (PS) forms) were used to collect data. The reported information can be classified into the following three broad groups:

1. Facility information shows facility identification number, name, physical location, mailing address, contact name and phone number, and waste generator and management status. It also shows source-reduction activity, recycling activity, opportunity assessment, recycling limitations, reason for not generating (where applicable), source reduction limitation, and site Standard Industrial Classification (SIC) code¹.
2. Waste generation and on-site waste management: LQGs report the quantity of RCRA hazardous waste generated and subsequently managed on-site or shipped off-site for treatment, storage, or disposal. LQGs report the source, characteristics, and quantity of hazardous waste generated on-site. In describing the waste, LQGs report type of waste, its source, type of hazard, and

¹ SIC codes are codes for industrial categories.

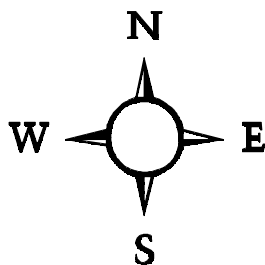
generic chemical name or primary hazardous constituents. For example, a waste could be described as follows:

‘ Toxic spent solvent naphtha used for cleaning and degreasing metal parts in shop parts washers contaminated with RCRA metals chlorinated and non chlorinated solvents.’

Source describes how the waste was generated; for example, it resulted from equipment decommissioning, or it was generated on-site from a production process or spill cleanup, etc. The type of hazard describes if waste is toxic, ignitable, or has other hazards. The waste is characterized by a combination of RCRA and State waste codes. For each waste, the BRS database allows the storage of up to 999 EPA waste codes and up to 999 State waste codes describing the waste. A waste is considered to be a Federal waste only if it contains at least one EPA RCRA waste. LQGs report the quantity of waste generated and the unit of measurement. Among other things, LQGs have an option to report the SIC Code, Source Code, and Form Code², and to indicate if waste is mixed with radioactive waste.

LQGs provide information relating to waste management on-site. For the waste under consideration, LQGs report the quantity of waste and the process used to treat, dispose of, or recycle on-site waste. The waste which is not managed on-site is shipped off-site for storage, treatment, or disposal. LQGs report the quantity of waste that is shipped off-site and the EPA ID where the waste is sent.

3. Off-site waste management: Handlers who receive waste from off-site identify the off-site waste shippers; describe the waste by its source, type of hazard and generic name or primary hazardous constituents, report different RCRA waste codes associated with waste; and report the quantity of waste received along with its unit of measurement. The waste handlers also report the process used to treat or dispose of each waste.



3.2. Can the database be used for spatial analysis?

The database can be used for spatial analyses because LQGs and TSDs are required to report the addresses of their physical locations. Although the database does not include information on latitude and longitude, it does include other spatial elements such as street addresses for each facility, the facility's ZIP code, the Federal Information Processing Standards (FIPS) code for the county, and the two-letter US Postal Service abbreviation for the State in which the facility is located. These location parameters can be used to report and compare waste generation and management activities of LQGs and TSDs in different geographic areas.

When collecting Biennial Report data, respondents are requested to provide their generator status according to the Federal generation status standards. Some

² Form codes describe the general physical and chemical characteristics of hazardous waste. These codes are divided into the major categories of lab packs, liquids, solids, sludges, and cases.

States, however, have a more stringent definition of LQG, or use a different State-specific forms package that only asks respondents about their generator classification based on State standards. This interpretational inconsistency may have an impact when performing State-to-State comparisons on the number of LQGs.



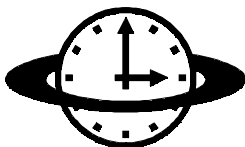
3.3. Can the database be used for temporal analysis?

Hazardous waste data are collected biennially to allow comparisons of waste generation and waste management activities over time. The data have been collected since 1981 but only data from 1989 onwards are available for use. The data from 1989 onwards are available in three different formats. The formats are FOCUS databases on EPA's IBM Mainframe, Oracle on EPA's Unix server, and flat file format. The Oracle database and the flat files are available to the public through the internet. The latest cycle for which final BRS data are available is 1995. Preliminary 1997 data are available now and final data will be available later in 1999.

BRS can be used to obtain an overview of the progress of the RCRA program through tracking trends in the amounts and types of hazardous waste generated and managed. Note that data present in the database is self-reported and facilities may use different methods of estimating wastes. EPA provides guidance to LQGs in an effort to promote the use of consistent methods of estimating waste. EPA allows facilities to estimate wastes using both engineering and monitoring methods. BRS does not report the estimation method used by the facilities.

Users can examine trends at the National, Regional, State, and facility levels. Except for the addition of 26 new codes in 1990, reporting requirements have more or less remained unchanged which makes it feasible to perform temporal analyses. As a result of the addition of these waste codes, users should exercise caution when comparing data for years prior to 1991 with post 1991 data.

The National Biennial RCRA Hazardous Waste Report (based on 1995 data) compares hazardous waste generation and management data for 1993 and 1995. For example, the report shows that in 1995, 20,873 LQGs produced 214 million tons of hazardous waste regulated by RCRA. According to that report, the number of LQGs had decreased by 3,489 since 1993, and the amount of hazardous waste generated by LQGs had dropped by 44 million tons.



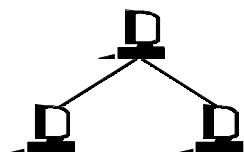
3.4. How consistent are the variables over space and time?

In general, reporting requirements are consistent among States. EPA has published lists of Federal waste codes in 40 CFR Part 261, and all States report information for the published lists of codes. Regulated facilities complete hazardous waste forms with guidance from a detailed instruction book provided to them by their State or Region. Some States use the instruction book and forms developed at EPA Headquarters (HQ) by the RCRA Program Office. Other States use Federal instructions and forms along with their own guidance

materials. In all cases, the instructions and forms used by each State provide at least the data that would have been provided if the Federal instructions and forms had been used. This allows a comparison of Federal waste generation and management information among different States. Some States may collect additional hazardous waste generation and management information which is not required by EPA. Some of the States define LQGs more strictly, and in such instances the data on hazardous waste may be reported from some of the facilities which are not LQG according to the Federal definition. While comparing information among States where the definition of LQGs is different, users should exercise caution.

In each reporting cycle, some waste codes (specific kinds of hazardous waste) may be added or deleted from the list of those for which reporting is required. In most cases, the overall difference from one reporting cycle to the next is not significant. The changes from cycle to cycle since 1991 have been fairly minor. However, a significant addition of waste codes occurred in 1990 when 26 new codes were added. These new waste codes resulted from adoption and application of the new Toxicity Characteristic Leaching Procedure (TCLP) for determining whether a specific waste qualified as hazardous based on a combination of: (1) toxicity, and (2) ability to leach through soil into groundwater. Waste codes D018 to D043 were added due to the TCLP rule. These changes mean that the wastes covered under the TCLP rule were not considered as RCRA wastes prior to 1990. These differences should be taken into account when comparing hazardous waste information over time. It may not be simple to isolate the effect of the addition of these codes since waste quantities are reported for waste (comprised of multiple waste codes) and not for waste codes. For 1995, these 26 new codes captured 63 million tons of wastes not regulated before 1990. An additional 42 million tons were described by D018 to D043 when mixed with other waste codes. This suggests that, in 1995, the new toxicity characteristic wastes captured as much as 105 million tons or approximately half of the total hazardous waste reported in 1995.

One potentially significant change was introduced in the meaning of the system type codes³ M135 and M136 for the reporting year 1997. From 1989 to 1995, code M135 meant a discharge to a publicly owned treatment works (POTW) (e.g., a municipal wastewater or sewage treatment plant) *without* treatment. Beginning in 1997, it refers to any discharge to a POTW, *with or without* treatment. Users will need to exercise caution when comparing waste management pre and post 1997 data involving the use of codes M135 and M136.



3.5. Can data from BRS be linked with information from other databases?

The reporting LQGs and TSDs can be linked with facilities from other databases. These facilities can be linked by variables such as ZIP code, county FIPS code, and two-letter State abbreviations. The EPA identification numbers in BRS

³ System type codes describe the type of hazardous waste management system used to treat or dispose of hazardous waste.

correspond to the identification numbers in the RCRIS database and therefore the data from BRS can be linked with information from RCRIS and with other databases which use the RCRIS facility identification numbers.

BRS stores data on wastes which are characterized using waste codes that are defined by the RCRA program (see CFR Part 261). Waste codes are used by the RCRA program to identify and characterize wastes. There are several different types of waste codes. Some waste codes are used to characterize properties of the waste (for example, D001 is an ignitable waste), some waste codes are source specific (for example, K013, bottom stream from the acetonitrile column in the production of acrylonitrile), and some waste codes characterize discarded commercial chemical products, off-specification species, container residues, and spill residues (for example, U007, Acrylamide). Each waste in the BRS database may be characterized by multiple waste codes according to the specific nature of the waste. The RCRA program waste codes do not necessarily correspond to other databases which store information on specific chemical compounds (like the standard Toxic Chemical Release Inventory System (TRI)). It may be difficult to compare toxic release data obtained from TRI with data in BRS because of the different information stored by the two databases.



3.6. How accurate are the data in BRS?

Regulated facilities complete hazardous waste forms in accordance with the guidance from a detailed instruction book provided to them by their States or Regions. EPA has set up hot lines to provide additional assistance to the regulated community in completing the required forms. Regulated facilities certify the accuracy of the information provided in the forms. Data collected from these forms are entered into a computer database by the State or by the EPA Regional office to which the forms were submitted. While inputting data, automated editing or checking procedures are used to further ensure data accuracy. There are three types of edits through which a data elements may be checked. Screen edits involve criteria that need to be satisfied in order for the database to accept the data that have just been keyed in. Basic edits are another set of criteria that need to be satisfied for the database to allow the data to be extracted and forwarded to the oversight level. Advanced edits are designed to improve the quality of data. EPA encourages electronic submission of the data in an effort to minimize data transcription errors.

EPA HQ does not modify the data reported by States or Regions. Any questions regarding the accuracy or completeness of the information reported for hazardous waste generation or management must be directed to the State or Regional agency responsible for the data collection. EPA organizes training sessions to promote data accuracy and consistency. Formal data audits have not been conducted by EPA HQ since 1985 and thus it is difficult to gauge the accuracy of the data in BRS.

BRS data are self-reported in that LQGs and TSDs identify themselves and report information on hazardous waste generation and management. BRS collects data using a census methodology in which all sites that meet the re-

quirements to report are expected to report. As with any large scale census, it is likely that not all potential TSDs and LQGs report in any given cycle. It is difficult to know if 100% of the regulated universe reports, but it can be said that the majority of the universe does. The reporting facilities in different reporting cycles cannot be compared with scientific precision because there are valid reasons why a site may report in one cycle and not report in another cycle. One example of this is that LQGs only need to report if they meet the LQG requirement for that reporting cycle.

In an effort to help States and Regions collect information from all appropriate LQGs and TSDs, EPA HQ provides tools to generate mailing lists for Biennial Report forms from a variety of different databases. Some smaller LQGs or TSDs may be missed in a State with a large number of facilities, but it is unlikely that the large facilities will be missed. BRS data show that, in 1995, the 50 largest generators accounted for 83% of the waste generated and the 50 largest TSDs collectively managed 89% of the waste (percentages based on the reported quantity of Federal waste generated or managed).

To help ensure data accuracy, once the data has been received by EPA HQ there is a three-month window of opportunity (between Preliminary Closure and Final Closure) for facilities to identify errors in the database and attempt to get them corrected by the implementing agency. The National Oversight database is not changed if errors in the database are identified by a facility at a later date.



3.7. What are the limitations of BRS?

BRS data are collected primarily to support RCRA program management activities. Users of the data are sometimes disappointed when attempting to use BRS data for purposes for which it was not designed. Below are listed some points that BRS data users should be aware of when using the BRS data:

1. BRS data can not be used to calculate total quantities of chemicals released to the environment. BRS collects data on wastes and does not collect data on chemicals or chemical concentrations. There are other databases available for this purpose, especially TRI.
2. Often wastes in BRS are characterized by multiple waste codes. Each waste characterizes the total quantity of waste generated or managed, and the contribution of any single waste code cannot be deduced from total waste. For example, if a waste has three waste codes, it is not correct to assume that each waste constitutes one-third or any other specific proportion of the amount of the waste. This is not a data irregularity or mistake; rather it is a consequence of the basic enabling legislation of the RCRA program.
3. BRS data can not be used to calculate the number of hazardous waste shipments or manifests. BRS does not collect data on number of shipments, only on total quantity shipped.

4. BRS data can not be used to check whether waste that was shipped from one site is actually received at another site. This type of analysis is complicated by two issues. Issue one is that BRS does not collect information on a shipment-by-shipment basis (that is, hazardous waste manifest information is not collected in BRS). Also, the reporting of wastes that flow through a commercial transfer facility is difficult. For example, in many cases a hazardous waste generator will contract with a commercial hazardous waste collection firm to collect its waste. The waste from many generators will be collected, mixed together, and then sent to a variety of commercial TSDs. There is no accurate way to report that a particular waste was sent from one shipper to one commercial TSD because of the commercial transfer facility.
5. BRS data are collected every two years rather than annually and no dates are provided for when in the reporting year the waste was generated. The data becomes available to the public approximately 18 months after reporting.



3.8. How can I get information on BRS?

OSWER provides information on BRS data and many of its documents through the following web site:

<http://www.epa.gov/epaoswer/hazwaste/data/>

In addition to the Instructions and Forms for the regulated community, OSWER provides National Biennial RCRA Hazardous Waste Reports as well as the Biennial Reporting System data files for the reporting years 1995, 1993, and 1991. BRS data can be purchased from NTIS on CD-ROMs. Users can query BRS data on the Right-to-Know network at the following site:

<http://www.rtk.net>

OSWER publishes the following reports for each reporting cycle:

1. Executive Summary: An overview of national hazardous waste generation and management practices;
2. National Analysis: A detailed look at waste handling practices in the EPA Regions, the States, and at the largest facilities in the nation, including quantities of generation, management, shipments and receipts, inter-State imports and exports, and counts of generators and managers;
3. State Summary Analysis: A two-page overview of the generation and management practices of individual States;
4. State Detail Analysis: A detailed look at each State's waste handling practices including overall totals for generation, management, and shipments and receipts, as well as totals for the fifty largest facilities;

5. List of Large Quantity Generators; and
6. List of Treatment, Storage, and Disposal facilities.



3.9. Is there documentation on BRS?

Statutory Authority

Sections 3002 and 3004 of the Resource Conservation and Recovery Act (RCRA), as amended, are available. Also, 40 CFR Part 261 is available in hard copy and on the internet at the following site:

<http://www.access.gpo.gov/nara/cfr/waisidx/40cfr261.html>

OSWER maintains documentation for BRS. The documentation includes a Data Element Dictionary, Structure Charts, and Users' Guide. Necessary documentation is also maintained for the implementor States or Regions.